

Abstract

A method and apparatus for performing maintenance on sewer pipes using a thermal sensor. The method and apparatus may be applied to the reinstatement of lateral openings after a liner has been installed in a main pipe. The thermal sensor detects the location of the lateral openings by sensing the thermal conditions of the liner. The thermal condition of the portions of the liner that cover the lateral openings is different from the thermal condition of the rest of the liner. The apparatus and method is also applicable to detecting groundwater leaks in the main pipe, and is also applicable to inspecting exothermic chemical reactions in the main pipe, such as exothermic grout or epoxy used to seal the liner in the main pipe. The thermal sensor may be integrated into a camera assembly that includes a visual camera at one end and the thermal sensor at the other end. The visual camera is useful in those portions of the main pipe that are full of water.